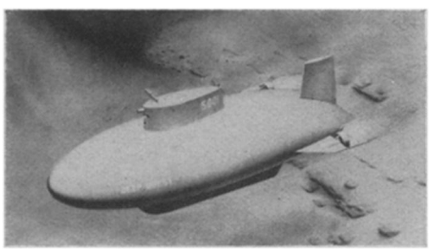
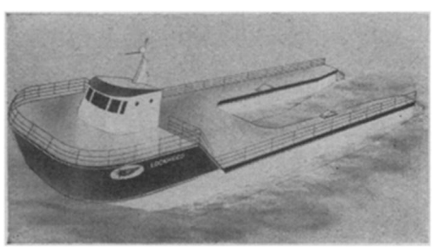
"Horseshoe" Vessel Mothers Research Sub



Baby sub . . .



And its Mommy

"Sub-porter" may be the slowest ship this side of a floating log, but it's just the thing to take care of a diminutive research submarine called the Deep Quest.

Specially designed for its job, the horseshoe-shaped "Sub-porter" will be launched in January as a floating base for the four-man submarine's research operations. An elevator built below the waterline will enable the Deep Quest to be driven on board, where it can then be raised completely out of the water for repair or refitting.

Besides its five-man crew, the 108-foot Sub-porter has accommodations for several scientists and technicians, as well as for test equipment.

Its top speed is a mere six knots, "but," said an official at Lockheed Missiles and Space Co., builders of both the sub and the service vessel, "we're not trying to win the Gold Cup races."

The Deep Quest itself will not be completed until June. Designed to reach depths as great as 8,000 feet, the submarine will be 40 feet long and 16 feet across.

Films of The Week

COLLEGE PHYSICS FILM SERIES. Audience: college physics students. Produced by Educational Services Inc. Purchase and rental information from Modern Learning Aids, 1212 Avenue of the Americas, New York, N.Y. 10015, or United World Films, 221 Park Avenue, New York 10003.

POSITRON-ELECTRON ANNIHILATION. 16mm, B&W, sound, 28 min. The annihilation of positron-electron pairs is demonstrated with several other brief demonstrations to emphasize the conservation of energy and the transformation of matter into radiation: $E = Mc^2$.

THE ULTIMATE SPEED, An Exploration with High Energy Electrons. 16mm, B&W, sound, 38 min. The speeds of electrons with kinetic energies in the range 0.5 15 mev are determined by time-of-flight techniques, and indicate a limiting speed equal to that of light.

TIME DILATION, An Experiment with μ-Mesons 16mm, B&W, sound, 36 min. Using the radioactive decay of cosmic ray mu-mesons the dilation of time is shown.

MOMENTUM OF ELECTRONS 16mm, Color, sound, 10 min. A demonstration in which a beam of electrons pushes on the vane of a torsion pendulum.

THE SIZE OF ATOMS FROM AN ATOMIC BEAM EXPERIMENT 16mm. B&W, sound, 28 min. An investigation of the scattering of an atomic beam of potassium by argon to find out something about the size of atoms.

THE MASS OF ATOMS (in 2 parts) 16mm, B&W, sound, 47 min. An experiment is performed in which the masses of a helium atom and a polonium atom are determined.

ANGULAR MOMENTUM, A Vector Quantity 16mm, B&W, sound, 27 min. This film uses various demonstrations to show that angular momenta add vectorially.

PHOTO EMISSION OF ELECTRONS 16mm, B&W, sound, 4 min. A current is detected when light falls on a negatively charged photo-sensitive surface; no current appears when the potential on the photocathode is reversed.

THERMIONIC EMISSION OF ELECTRONS 16mm, Color, sound, 6 min. Current is observed in a diode when the filament is heated with a positive plate potential—the plate also gets red-hot. No current is detected with potential reversed.

FIELD EMISSION OF ELECTRONS 16mm, B&W, sound, 4 min. Shows how electrons can be dragged out an unheated wire by strong electric fields.

REFLECTIONS AND REFRACTION, Ripple Tank Wave Phenomenana I. 16mm, B&W, 17 min. Circular and straight pulses are reeflcted from various shaped barriers.

INTERFERENCE AND DIFFRACTION, Ripple Tank Wave Phenomena II. 16mm, B&W, sound, 19 min. Starting from single pulses from two sources an interference pattern is built up.

BARRIER PENETRATION, Ripple Tank Wave Phenomena III. 16mm, B&W, sound, 8 min. A wide channel of deep water between two shallow regions in the ripple tank acts as a barrier to a wave incident from one of the shallow regions; the incident wave is totally reflected. As the channel is narrowed reflection diminishes and transmission across the channel increases.

BRAGG REFLECTION, Ripple Tank Wave Phenomena IV. 16mm, B&W, sound, 10 min. Waves are scattered from a two-dimensional array (lattice) of small objects producing a strong reflection at the angle defined by 2D sin $\phi = n\lambda$.

DOPPLER EFFECT AND SHOCK WAVES, Ripple Tank Wave Phenomena V. 16mm, B&W sound, 8 min. The effect produced by a source of periodic waves moving at various speeds with respect to the wave medium is demonstrated.